

APPENDIX C

PROJECT-WIDE MITIGATION MEASURES AND PROCEDURES

For this project, the Companies have voluntarily agreed to use and comply with the following measures and procedures to avoid or mitigate potential impacts to resources or other land uses, after consultation with BLM regarding agency requirements. These measures and procedures will be referred to as Best Management Practices (BMPs) throughout this document. These mitigation measures and procedures would be applied on privately-owned surface unless the private surface owners involved specifically require alternative actions while still in compliance with laws and regulations. An exception to a mitigation measure or design feature may be approved on public land on a case-by-case basis when deemed appropriate by the BLM. An exception would be approved only after a thorough, site-specific analysis had concluded that the resource or land use that the measure was intended to mitigate is not present or would not be significantly affected in the absence of mitigation measures.

PRECONSTRUCTION PLANNING, DESIGN, AND COMPLIANCE MEASURES

1. The Companies would designate a qualified representative to serve as compliance coordinator. This person will be responsible for ensuring that all requirements of the APD and Plan of Development (MSUP, MDP, WMP, and Conditions of Approval) are followed.
2. The Companies and the BLM would make on-site inspections of each proposed and staked facility site (such as drill locations and other facilities), new access road, access road upgrades (two-track roads), and pipeline alignment projects to develop site-specific recommendations and mitigation measures.
3. New roads would be constructed and existing roads maintained in the Project Area in accordance with standards in BLM Manual 9113 and applicable regulations for resource roads and construction details outlined in the MSUP and Conditions of Approval. These standards would be followed on BLM surface ownership lands.
4. Prior to construction, the Companies would submit an APD package to the BLM. This package would contain individual APDs for each drill site, as well as the MDP, MSUP, WMP, schematics of facilities, and ROW applications for pipelines, utilities, and access roads. APDs submitted by the Companies would show the layout of the drill pad over the existing topography, the dimensions of the pad, cross sections of the cuts and fills (when required), the location and dimensions of reserve pits, and locations of access roads.
5. The Companies would slope-stake construction when required by the BLM (for example, in steep or unstable slopes) and receive approval from the BLM before construction begins.
6. The BLM would require roads to be crowned with a 0.3- to 0.5-foot crown, and ditched. The topsoil would be graded over the cut slope so no berm is left at the top of the cut slope.
7. The BLM would require that culverts in roads be covered with a minimum of 12 inches of fill or one-half the diameter of the pipe, whichever is greater. The inlet and outlet will be set flush with existing ground and lined up in the center of the draw. Before the area is backfilled, the bottom of the pipe will be bedded on stable ground that does not contain expansive or clay soils, protruding rocks that would damage the pipe, or unevenly sized material that would not form a good seat for the pipe. The site would be backfilled with unfrozen material and rocks no larger than two inches in diameter. Care would be exercised to thoroughly compact the backfill under the haunches of the conduit. The backfill would be brought up evenly in six-inch layers on both sides of the conduit.
8. Additional culverts would be installed in the existing access road as needed or as directed by the BLM.

9. The access roads would be surfaced with an appropriate grade of aggregate or gravel to a depth of four inches before the drilling equipment or rig is moved onto the pad.
10. The BLM would require that access roads be maintained in a safe and usable condition. A regular maintenance program would include, but is not limited to, blading, ditching, installing or cleaning culverts, and surfacing.
11. Written approval of the authorized officer will be obtained before snow removal outside the new and existing roadways is undertaken. If approval is given, equipment used for snow removal operations outside the road ditches will be equipped with shoes to keep the blade off the ground surface. Special precautions will be taken where the surface of the ground is uneven to ensure that equipment blades do not destroy the vegetation.
12. The BLM would require that wing ditches be constructed, as necessary, to divert water from road ditches.
13. Trenches that are open for the installation of pipelines should have plugs placed no more than 1,000 feet apart to allow livestock and wildlife to cross the trench or walk out of it, if needed. Placement of plugs would be determined in consultation with the BLM and any affected landowner.
14. Procedures would be implemented to prevent livestock or wildlife from falling into open excavations. Procedures could include temporary covers, fencing, or other means acceptable to the BLM and any affected landowner.

RESOURCE-SPECIFIC REQUIREMENTS

The Companies propose to implement the following resource-specific mitigation measures, procedures, and BLM management requirements on public lands.

Geology, Minerals, and Paleontology

Mitigation measures presented in the sections of this EA on Soils and Water Resources would avoid or minimize many of the potential impacts to surface mineral resources. BLM and WOGCC policies on casing and cementing would protect subsurface mineral resources from adverse impacts.

Scientifically-significant paleontological resources that may occur would be protected through the following mitigation measures:

1. If recommended by the BLM, each proposed facility located in areas of known and potential vertebrate paleontological resources would be surveyed by a BLM-approved paleontologist before any surface disturbance is allowed (BLM 1987 and 1990).
2. Discovery. Project personnel would make contingency plans for the accidental discovery of significant fossils. If construction personnel discover fossils during implementation of the project, the BLM would be notified immediately. If the fossils could be adversely affected, construction would be redirected or halted until a qualified paleontologist had assessed the importance of the uncovered fossils, the extent of the fossiliferous deposits, and had made or implemented recommendations for further mitigation.
3. Field Survey. No specific data currently exist on deposits of high or undetermined paleontologic potential in Project Area. For that reason, field survey for paleontologic resources would be conducted on a case-by-case basis, as directed by the BLM. These resources would be surveyed in areas where surface exposures of the Browns Park, Green River, or Wasatch Formations occur.

A field survey may result in the identification of additional mitigation measures needed to reduce adverse impacts to fossil resources. This mitigation may include collection of additional data or representative samples of fossil material, monitoring excavation, or avoidance. In some cases, no action beyond the measures taken during the field survey may be necessary.

A report would be submitted to the BLM after each field survey is complete. The report will describe, in detail, the results of the survey with a list of fossils collected, if any, and may recommend additional mitigation measures. If scientifically-significant fossils are collected, the report must document the curation of specimens into the collection of an acceptable museum repository and must contain appropriate geologic records for the specimens.

Air Quality

1. All activities conducted or authorized by the BLM must comply with local, state, tribal, and federal air quality regulations and standards. The Companies would adhere to all applicable ambient air quality standards, permit requirements (including preconstruction, testing, and operating permits), standards for motorized equipment, and other regulations, as required by the WDEQ-AQD.
2. The Companies would not allow garbage or refuse to be burned at well locations or other facilities. Before any wells are vented or flared, WDEQ-AQD would be notified as required by Wyoming Air Quality Standards and Regulations, Chapter 1, Section 5, *Reporting Guidelines for Well Flaring and Venting*. Test periods longer than 15 days would require authorization by WOGCC, in accordance with Chapter 3, Section 40, *Authorization for Flaring and Venting of Gas*.
3. On federal land, the Companies would immediately abate fugitive dust (by application of water, chemical dust suppressants, or other measures) when air quality is impaired, soil is lost, or safety concerns are noticed by the Companies or identified by the BLM or the WDEQ-AQD. These concerns include, but are not limited to, actions that exceed applicable air quality standards. BLM would approve the control measure, location, and application rates. If watering is the approved control measure, the operator must obtain the water from state-approved sources in accordance with any applicable regulations.

Soils

1. The Companies would reduce the area of disturbance to the absolute minimum necessary for construction and production operations while providing for the safety of the operation.
2. Where feasible, the Companies would locate pipelines immediately adjacent to roads to avoid creating separate areas of disturbance and to reduce the total area of disturbance.
3. The Companies would avoid using frozen or saturated soils as construction material.
4. The Companies would minimize construction in areas of steep slopes.
5. Cut slopes would be designed in a manner that would retain topsoil, and facilitate use of surface treatment such as mulch and subsequent revegetation.
6. The Companies would selectively strip and salvage topsoil or the best suitable medium for plant growth from all disturbed areas. Topsoil would be removed and conserved to a minimum depth of 6 inches and a maximum of 12 inches from all drill locations, unless otherwise agreed by the BLM and the operator.
7. Where possible, disturbance to vegetated cuts and fills would be minimized on existing improved roads.

8. The Companies would install runoff and erosion control measures such as water bars, berms, and interceptor ditches if needed.
9. The Companies would install culverts for ephemeral and intermittent drainage crossings. In addition, drainage crossing structures would be designed to carry the 25-year discharge event, or as otherwise directed by the BLM.
10. Layout of the access roads may require minor variations in routing to avoid steep slopes adjacent to ephemeral or intermittent drainage channels. Where possible, the Companies would maintain a 100-foot wide buffer of natural vegetation (not including wetland vegetation) between construction and ephemeral and intermittent channels.
11. The Companies would include adequate drainage control devices and measures in the design of roads (for example, berms and drainage ditches, diversion ditches, cross drains, culverts, out-sloping, and energy dissipaters). These devices and measures would be located at sufficient intervals and intensities to adequately control and direct surface runoff above, below, and within the road to avoid erosive, concentrated flows. In conjunction with surface runoff or drainage control measures, the Companies would use erosion control devices and measures such as temporary barriers, ditch blocks, erosion stops, mattes, mulches, and vegetative covers. In addition, the Companies would implement a revegetation program as soon as possible to reestablish the soil protection afforded by vegetation.
12. When construction that is not specifically required for production operations is complete, the Companies would restore topography to near pre-existing contours at the well sites, along access roads and pipelines, and other facilities sites. The Companies also would scarify regraded surfaces and redistribute up to six inches of topsoil or suitable plant growth material, if available, over all disturbed surfaces; roughen the soil surface; apply fertilizer as required; seed; and mulch.

Water Resources

Other mitigation measures listed in the sections of this EA on Soils and Vegetation and Wetlands would apply to Water Resources.

1. The Companies would limit construction of all drainage crossings to no-flow or low-flow periods.
2. The area of disturbance would be minimized within perennial, ephemeral, and intermittent drainage channels.
3. The BLM would prohibit construction of well sites, access roads, and pipelines within 500 feet of surface water and riparian areas. Possible exceptions to this will be granted by the BLM based on an environmental analysis and site-specific mitigation plans.
4. The Companies would design channel crossings to minimize changes in channel geometry and subsequent alterations in flow hydraulics.
5. Layouts of the access roads may require minor variations in routing to avoid steep slopes adjacent to ephemeral or intermittent drainage channels. Where possible, a 100-foot wide buffer of natural vegetation (not including wetland vegetation) would be maintained between construction and ephemeral and intermittent channels.
6. Interceptor ditches, sediment traps, water bars, silt fences, and other revegetation and soil stabilization measures would be designed and constructed, as needed.

7. The Companies would construct channel crossings by pipelines such that the pipe is buried a minimum of four to six feet below the channel bottom, as specified by the BLM.
8. Disturbed channel beds would be regraded to the original geometric configuration and would contain the same or similar bed material.
9. Wells must be cased during drilling, and all wells cased and cemented in accordance with Onshore Order No. 2 to protect all high-quality aquifers. High-quality aquifers exhibit known water quality of 10,000 milligrams per liter total dissolved solids (TDS) or less. Well casing and welding must be of adequate integrity to contain all fluids under high pressure during drilling and well completion. Furthermore, wells would adhere to the appropriate BLM cementing policy.
10. The reserve pits would be constructed in cut rather than fill materials. Fill material must be compacted and stabilized, as needed. The subsoil material of the pit to be constructed should be inspected to assess stability and permeability and to evaluate whether reinforcement or lining is required. If lining is required, the reserve pit must be lined with a reinforced synthetic liner at least 12 mils thick and with a bursting strength of 175 by 175 pounds per inch [American Society for Testing and Materials (ASTM) Standard D 75179]. Use of closed or semi-closed drilling systems should be considered in situations where a liner may be required.
11. Two feet of freeboard must be maintained on all reserve pits to ensure they are not in danger of overflowing. Drilling operations must be shut down if leakage is found outside the pit until the problem is corrected.
12. Hydrostatic test water used in conjunction with pipeline testing, and all water used during construction or dust abatement must be extracted from sources that contain sufficient quantities and with appropriation permits approved by the State of Wyoming.
13. Hydrostatic test water would be injected into an authorized deep injection well, in compliance with all applicable requirements.
14. All concentrated water flows must be discharged within the ROW for an access road onto or through an energy dissipater structure (such as riprapped aprons and discharge points) and into undisturbed vegetation.
15. If required by the applicable regulations, the Companies would develop and implement a pollution prevention plan (PPP) for storm water runoff at drill sites as required per WDEQ permit requirements under NPDES. All required WDEQ permits would be in place before stormwater is discharged.
16. The Companies would exercise stringent precautions against pipeline breaks and other potential accidental discharges of oil or hazardous chemicals into adjacent streams. If liquid petroleum products are stored on site in sufficient quantities (per the criteria contained in Title 40 CFR Part 112), a Spill Prevention Control and Countermeasures (SPCC) plan would be developed in accordance with 40 CFR Part 112.
17. The Companies would coordinate all crossings or encroachments of waters of the U.S. with the U.S. Army Corps of Engineers (COE).
18. The BLM must approve, in writing, any changes in the method or location for disposal of produced water.

Vegetation, Wetlands, and Noxious Weeds

Other mitigation measures under the section on Soils and Water Resources of this EA would also apply to vegetation and wetlands.

1. The Companies must implement a BLM-approved weed control and eradication program.
2. The Companies would evaluate all project facility sites for occurrence and distribution of waters of the U.S., special aquatic sites, and jurisdictional wetlands. All project facilities would be located outside these sensitive areas. If complete avoidance is not possible, the Companies would minimize impacts through modification and minor relocations. The Companies will comply with applicable regulations for any activities that involve dredge or fill or wetlands.
3. An approved Pesticide Use Proposal would be obtained before herbicides or other pesticides are applied on BLM surface ownership lands to control noxious weeds.
4. Disturbed areas would be seeded and stabilized in accordance with BLM-approved reclamation guidelines.

Range Resources and Other Land Uses

Mitigation requirements listed under sections of this analysis on Soils, Vegetation, Wetlands, Noxious Weeds, and Wildlife also apply to Range Resources and Other Land Uses.

1. The Companies would coordinate with the affected livestock operators to ensure that livestock control structures remain functional (as directed by the livestock operator) during drilling and production operations, and to coordinate timing of activities planned.
2. When necessary, traffic control and speed limits would be used to limit potential conflicts.

Wildlife

1. During reclamation, the Companies would establish a variety of forage species that would return the land to a condition that approximates or is equal to its state before disturbance.
2. The Companies would prohibit unnecessary off-site activities of operational personnel near the drill sites. The Companies also would inform all project employees of applicable wildlife laws and the potential penalties associated with unlawful take and harassment.
3. The Companies would limit construction within crucial winter range for big game timing stipulations unless an exception is authorized by the BLM.
4. A raptor survey would be completed before construction begins to ensure that well sites are located away from potential conflict areas.
5. The Companies would survey and clear well sites within one mile of raptor nests identified in the raptor survey before construction or drilling can begin during the raptor nesting period (February 1 through July 31).
6. When an "active" raptor nest is located within 0.75 to 1 mile of a proposed well site (depending on species and line of sight), the Companies must restrict construction during the critical nesting season for the species. The distance would be increased to within 1 mile of a proposed well site for listed and BLM sensitive species (Chapter 3).
7. Raptor nests must be inventoried annually to evaluate potential nesting activity in areas where work may be occurring during the raptor nesting period from February 1 to July 31.

8. Construction and surface occupancy cannot occur any time within 0.25 mile of existing leks for greater sage grouse.
9. Construction, drilling, and other activities potentially disruptive to strutting and nesting greater sage-grouse are prohibited during the period of March 1 to June 30 for the protection of strutting and nesting areas.
10. Construction, drilling, or other activities that could disrupt nesting raptors or greater sage-grouse are prohibited during the period from February 1 to July 31 (raptors) and from March 1 through June 30 (greater sage-grouse) for the protection of nesting areas for these species. An exception would be approved only after a thorough, site-specific analysis concluded that a negative impact would not occur.
11. Surface occupancy or use within 0.25 mile of a greater sage-grouse strutting or dancing ground will be restricted or prohibited unless the operator and BLM arrive at an acceptable plan for mitigation of anticipated impacts.
12. All pits and open cellars must be fenced for the protection of wildlife and livestock. Fencing must be in accordance with BLM specifications. Netting must be placed over all production pits to eliminate any hazard to migratory birds or other wildlife. Netting is also required over reserve pits that have been identified as containing oil or hazardous substances as these terms are defined in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 101 (14), as determined by visual observation or testing. The mesh diameter will be no larger than one inch.
13. Construction, drilling, and other activities are prohibited during the reproductive period of April 10 to July 10 for the protection of mountain plover.

Fisheries

1. No mitigation for fisheries is needed beyond the measures indicated under Water Resources and Special Status Species.

Special Status Species

Special Status Plants

1. Clearance surveys must be performed for plant species of concern.

Recreation

Measures under the section of the EA on Wildlife, Transportation, Soils, Health and Safety, and Water Resources apply to Recreation.

1. The Companies must minimize conflicts between project vehicles and equipment and recreation traffic by posting warning signs, implementing operator safety training, and requiring project vehicles to adhere to low speed limits.

Visual Resources

1. Roads, pipeline corridors, drill rigs, wellheads, and production facilities must be screened to the extent possible, when specified by the BLM.

2. The Companies must paint structures at wells and central facilities with flat colors (such as Carlsbad Canyon) that blend with the adjacent undisturbed terrain. This measure does not apply to structures that require safety coloration in accordance with the requirements of the Occupational Safety and Health Administration (OSHA).

Cultural Resources

1. A Class III inventory for cultural resources has been done, but if the area of potential effect were to change, additional inventory would be required.
2. Avoidance is the preferred method for mitigating adverse effects to a property that is considered eligible for, or is already on, the NRHP.
3. Adverse effects to cultural or historical properties that cannot be avoided would be mitigated by preparing and implementing a cultural resources mitigation plan. Mitigation plans would be developed as needed for eligible sites that would be impacted.
4. If cultural resources are discovered at any time during construction, all construction would halt and the BLM would be immediately notified. Work would not resume until the BLM issues a Notice to Proceed.

Socioeconomics

1. Project activities must be coordinated with ranching operations to minimize conflicts that involve movement of livestock or other ranch operations. Coordination would include scheduling project activities to minimize potential disturbance of large-scale livestock movements. The Companies would establish effective and frequent communication with affected ranchers to monitor and correct problems and coordinate scheduling.

Transportation

1. Existing roads, if any, would be used as collectors and local roads whenever possible. Standards for road design would be consistent with BLM Road Standards Manual Section 9113. The proposed access road would be constructed to the BLM standard for a local road.
2. All roads on public lands that are not required for routine operation and maintenance of producing wells, ancillary facilities, or field production would be permanently blocked, recontoured, reclaimed, and revegetated.
3. Areas with important resource values, steep slopes, and fragile soils would be avoided, where possible, in planning for new roads.
4. Permits are required from Carbon County for any access to or across a county road or for any pipeline that crosses a county road. These permits would be acquired before additional roads are built. Roads on private lands would be reclaimed in a like manner to those on public lands, depending on the desires of the landowner.
5. The Companies would be responsible for preventive and corrective maintenance of roads in the Project Area throughout the duration of the project. Maintenance may include blading, surfacing, cleaning ditches and drainage facilities, abating dust, controlling noxious weeds, or other requirements as directed by the BLM or the Carbon County Road and Bridge Department.

6. Except in emergencies, access would be limited to drier conditions to prevent severe rutting of the road surface. No construction or routine maintenance activities would be performed during periods when the soil is too wet to adequately support construction equipment. If such equipment creates ruts in excess of four inches deep, the soil would be considered too wet to adequately support construction equipment. Culverts would be installed where needed to allow drainage in all draws and areas of natural drainage. Low water crossings would be used where applicable. Onsite reviews would be conducted with BLM personnel for approval of proposed access before any construction begins.

Health and Safety

Measures listed under the section of the EA on Air Quality and Water Quality also apply to Health and Safety.

1. Sanitation facilities installed on the drill sites and any resident camps would be approved by the WDEQ.
2. To minimize undue exposure to hazardous situations, the Companies would comply with all applicable rules and regulations (such as Onshore Orders and OSHA requirements) that would prevent the public from entering hazardous areas and would post warning signs to alert the public of truck traffic.
3. The Companies would haul all garbage from the drill site to a state-approved sanitary landfill for disposal. In addition, the Companies would collect and store any garbage or refuse on location in containers approved by the BLM until it can be transported.
4. During construction and when production operations begin, the Companies would maintain an inventory of chemicals or hazardous substances for all items that may be at the site. The Companies would institute a Hazard Communication Program for employees and would require subcontractors to establish programs in accordance with OSHA regulations at 29 CFR 1910.1200. These programs are designed to educate and protect employees and subcontractors with respect to any chemicals or hazardous substances that may be present in the work place. In addition, Material Safety Data Sheets (MSDS) would accompany every chemical or hazardous material that is brought on location and would become part of the file maintained at the Doty Mountain field office, as required by 29 CFR 1910.1200. All employees would receive proper training in storage, handling, and disposal of hazardous substances.
5. SPCC Plans would be written and implemented as necessary, in accordance with 40 CFR Part 112, to prevent discharge into navigable waters of the United States.
6. If quantities that exceed 10,000 pounds or the threshold planning quantity (TPQ) as designated by the RFO are to be produced or stored in association with the project, chemical and hazardous materials would be inventoried and reported in accordance with the toxic release inventory (TRI) requirements set forth in Title III of the Superfund Amendments and Reauthorization Act (SARA) and codified at 40 CFR Part 335. The required Section 311 and 312 forms would be submitted at the specified times to the state and county emergency management coordinators and the local fire departments.
7. Any hazardous wastes, as defined by the Resource Conservation and Recovery Act (RCRA), would be transported and disposed of in accordance with all applicable federal, state, and local regulations.
8. All storage tanks and compressor facilities that are designed to contain oil, glycol, produced water, or other fluid that may constitute a hazard to public health or safety, must be surrounded by a

secondary means of containment for the entire contents of the largest single tank in use, plus one foot of freeboard. The Companies would use 3.5-foot berms around affected storage tanks and facilities. The containment or diversionary structure must be impervious to any oil, glycol, produced water, or other hazardous fluid for 72 hours. In addition, it would be constructed so that any discharge from a primary containment system would not drain, infiltrate, or otherwise escape to groundwater, surface water, or navigable waters before cleanup is completed.

Noise

1. The Companies would muffle and maintain all motorized equipment according to manufacturer's specifications.
2. In any area of operations (such as a drill site or compressor station) where noise levels may exceed safe limits specified by OSHA, the Companies would provide and require that employees use proper personal protective equipment.
3. In addition to other restrictions on activities near leks, the BLM will require that noise levels be limited to no more than 10 decibels on the A-weighted scale (dBA) above background levels at leks for greater sage grouse that are located on public lands. This scale simulates human hearing by placing less emphasis on lower frequency noise. The BLM will require that compressor engines located on public lands be enclosed in a building and located at least 600 feet away from sensitive receptors or sensitive resource areas to comply with these limits on noise levels.